The potential for producing agricultural and manufactured products for export was also a consideration. The Afghan government envisioned development of electric power to assist in these purposes. Flood control was another objective. All of these factors were to create government income which would eventually pay off the capital investment.

E. U.S. Assistance, and Goals

Proceeds of the ExImBk loans were used principally for MKA construction of dams, roads, and irrigation systems. The RGA has maintained all scheduled payments on these loans, and the final payment is due in 1977.

In 1952 the U.S. Government began a grant program of technical assistance in connection with the irrigation system. From 1952 to 1963 the U.S. made grants of $3,883,080 for technical assistance plus $6,712,250 for capital assistance projects, for a total of $10,595,330 in grant assistance involving 11 projects in HAVR. Part of these grant funds were for community services and electric power, and some were for irrigation and agricultural development.

In 1963 all U.S. aid activities in HAVR were combined into Project No. 306-11-995-090. Since 1963 project support has been largely for advisory assistance by U.S. direct hire and PASA technicians to organize and strengthen the organizational capability of HAVA and HACU to the point where these organizations could assume direct responsibility for operating HAVA projects.

Since 1963, grant funds totaling $8,050,120 were obligated under Project No. 306-11-995-090 through April 30, 1972. The total of U.S. aid grants and loans from inception in 1952 through April 30, 1972 is $18,645,450. About two-thirds of this total was for technical services and one-third for commodities.

In 1968, AID also entered into loan agreements for $12 million and $4.6 million, respectively, in connection with installation of a power plant at Kajakai Dam and land development of the Shamalan Project. Obligations under these loan agreements were not made until 1971. Smaller grants and loans have been made for contract services and construction of other electric power projects in HAVR.

Initially, U.S. goals were very broad in nature and covered establishment of facilities, education and other community services, and assistance in development and implementation of systems operation including agriculture, water resources and electric power. In the past few years the ultimate goal has been to assist HAVA and HACU attain the ability to operate independently of U.S. assistance. Based on assumed accomplishment of this goal, AID technical assistance projects in HAVR were scheduled to terminate in 1972.

The $39.5 million loans from ExImBk enabled the RGA to construct a framework for an irrigation system and produced many tangible benefits. However, the scope of the project was much too large for available financial resources, and the system remains incomplete.

Since the major construction terminated, U.S. aid has been mostly technical assistance from BuRec in connection with the irrigation system, and agricultural assistance from AID in improved farming methods and management. There is no method to measure direct benefits from this technical assistance, but in the past 20 years there has been a measurable increase in the general economic growth of HAVR as a direct result of all inputs into the system.

During the past five years new farming methods induced by our technical assistance resulted in large annual increases in farm yield and income per acre. This was reflected in the 1970 Farm Economic Survey, performed under an AID contract, and in follow-up surveys in 1971 and 1972. The most outstanding increases were due to introduction of higher yielding strains of wheat and corn and in planting more than one crop each year on the same land. There was also a large increase in use of fertilizers, mechanized farming and credit which was directly attributable to U.S. assistance.

With the definite U.S. accomplishments, there is still not sufficient capability by HAVA and HACU to perform effectively without guidance and material assistance from outside sources. Continued U.S. technical assistance is vital in developing and maintaining the resources in HAVR, to protect the large capital investment and to assure the achievement of humanitarian goals.

Prior to 1950 Afghanistan had little contact with the outside world. In the past few years the social and economic progress has been tremendous and is improving at an accelerated rate. When the growth imbalances level off, the Afghans and HAVA in particular may be prepared to assume their responsibilities.

PART III

SUMMARY

A. Accomplishments

1. Due to a combination of fortuitous circumstances and limited but effective U.S.A.I.D. agricultural technical assistance and some improvement in drainage systems during the past five years there has been a tremendous increase in crop production and improvement in the farm and regional economy.

2. Agricultural credit, combined with a sizeable increase in mechanized farming, has encouraged double cropping and improved cultural practices. The farmers have also been able to buy increasing quantities of fertilizer to meet their needs.

3. After years of indecision the Shamalan reconstruction project has begun on a small scale, but the outcome is still in doubt.

4. In June 1972, a contract was entered into for construction of an electric power generating plant in Kajakai Dam under Loan 013. The loan agreement between the USG and the RGA was entered into in May 1968 after a long period of negotiation. Construction of the units covered by this loan began in August 1972.

5. Due to success of the agricultural technical assistance program and an improved economic position, farmers have become more innovative and willing to try new methods. At this point, some farmers now appear to be ahead of HAVA and RGA officials in their willingness to assume obligations for improvements which directly benefit them.

B. Problems

1. The Shamalan land development project is not proceeding according to schedule, and supplemental financing could be required to complete the project according to the initial concept if delays are not overcome. The new Shamalan Canal will be completed and area problems will be multiplied unless HAVA, AID and BuRec take prompt action to assure that land development proceeds at the same pace.

2. HAVA and HACU have good organizational structures but lack of good management practices and administrative procedures have made the organizations relatively ineffectual.

3. HAVA and HACU have not developed equipment maintenance capability without continued U.S. technical assistance and foreign exchange for commodities, nor do they have sufficient capacity in engineering.

4. Although some progress has been made, information and statistics in all areas are deficient. Aerial photography planned for the Spring of 1973 is expected to provide some reliable statistics and information of farming patterns, but the Mission should consider furnishing direct technical assistance to achieve the total statistics which are urgently needed for intelligent application of further U.S. programs in the Valley.

5. Operations and maintenance of canals, laterals and drains has been seriously behind schedule except for limited but impressive drainage improvement achieved under the Food for Work Program. Main drains and some laterals are choked with weeds and are silting.

6. HAVA and HACU remain heavily dependent on U.S. assistance with lack of effective effort made to become self-sufficient.

7. HAVA does not intend to institute charges for services, except in the future for land in the Shamalan after it becomes fully developed. Due to slow progress on land development, implementation of this policy will not improve the HAVA financial position within the foreseeable future.

8. An export market for the Region's produce has not been adequately exploited.

9. The HAVA Experimental Farms are not being successfully operated and are a drain on available resources.

10. The HAVA Extension Program is not operating effectively because of financial, personnel and administrative restraints.

C. Recommendations

Five recommendations for USAID/Afghanistan action are contained in this report. Because of the nature of the comprehensive review and findings, all of the recommendations are necessarily broad and will require a long period for implementation. Since the Mission Director has expressed agreement with the findings and recommendations and his intention to pursue the broad goals of the recommendations, we are considering that action has been taken and all the recommendations closed.

It is recognized that ultimate conformance with these recommendations is dependent upon concurrence by various action offices in AID/W and also upon high level policy determinations. However, the recommendations were directed to USAID/Afghanistan since it has the responsibility to monitor the performance of the RGA, HAVA, BuRec and other external parties who participate in these AID-financed activities and who are objects of the thrust of the recommendations. As to those recommendations involving the future direction of U.S. assistance in Helmand Valley, USAID/Afghanistan has the initial responsibility to prepare programs and recommend courses of action to implement the recommendations in this report.

In accordance with Auditor General policy, we discussed with Mission officials our findings as they were being developed throughout the review. As appropriate, Mission views and actions taken were incorporated in the report. The Mission Director and other officials concerned have reviewed this report and have expressed approval. Mission officials were aware of most of the problems and other findings, but expressed interest in having them presented in this report for the benefit of all levels of management for use in making future determinations.

PART IV

STATEMENT OF FINDINGS AND RECOMMENDATIONS

A. Construction and Development Program

1. Irrigation and Drainage

Statistics in general have been and still are unreliable on the number of acres of irrigated cropland. The best figures available indicate that approximately 200,000 acres were irrigated prior to construction of the Arghandab and Kajakai dams; however, there are indications that due to shortage of water, fallow practices and other factors, much of this acreage was not cropped every year. After completion of the dams, main canals and other development activities the estimated irrigated acreage increased to over 300,000 acres, although it is doubtful if this much acreage was effectively cropped. It is estimated that a total of 500,000 acres in the area could be developed and irrigated, but only at considerable expense.

The Afghan Government placed first emphasis on availability of water to existing and planned irrigation systems, without adequate provision for drainage. Considerable acreage in Nad-i-Ali and Marja, two of the most important reclamation and resettlement areas, became almost entirely unusable and were abandoned by most of the settlers within a few years. Drainage is now being added in some of these areas and the recovery is promising. People are moving back into the improved areas, agriculture productivity is high, and land values have risen sharply.

Due to limited availability of funds many modifications had to be made in the land development construction plans before and during the construction work by MKA. Even with these modifications, MKA construction was terminated in 1959 after all available funds were expended and with $15 to $20 million in work yet to be performed under the modified plan. Altogether, an estimated $45 million has been spent directly affecting irrigation, drainage, and land development. Approximately $20 million of this amount was for construction of the two dams.

The Arghandab Dam was completed in 1952 and the Kajakai Dam in 1953. The Boghra Diversion Dam and Boghra Canal were completed in 1952, and the Shamalan, Darweshan and East Marja Canals were completed in 1956 and 1957. The Arghandab Diversion Dam, the Arghandab South Canal and the Tarnak Canal were completed in 1957.

In 1968 a flood control and drainage construction program, primarily benefiting the city of Kandahar, added about 2,000 acres of cropland on the outskirts of the city. During the past several years HAVA and HACU have accomplished relatively limited new construction on main and lateral drainage in Helmand Province.

2. Shamalan Land Betterment Project

a. Nature of Project

After several years of consideration of areas in HAVR where it would be economically feasible to develop a complete irrigation system to serve as a model for future capital development in the region, an AID-financed U.S. Bureau of Reclamation (BuRec) team selected the Shamalan project area across the Helmand River from HAVA and USAID headquarters in Lashkar Gah.

Land in the low lying areas of the Shamalan adjacent to the river is among the oldest irrigated land in the region, and before 1952 was irrigated by privately constructed canals and diversions from the river. In 1952 MKA constructed a new Shamalan canal with diversion of water from the newly completed Boghra canal, but this Shamalan canal (about 60 km. in length) followed an elevation too low to efficiently service the optimum irrigable land available. Also, funds were not available for leveling the land for irrigation and eliminating vestiges of the old system, and for constructing proper drainage.

Most of the irrigable land in the Shamalan is still without efficient distribution and drainage facilities, and needs smoothing and leveling to increase crop production. A typical farm has fields irrigated by water let into small basins bounded by low dikes. The distribution system is inadequate, with meandering water courses and high, irregular spoil banks. Under the BuRec plan it will be necessary to correct all these

irregular physical features before successful development of the model project is complete.

b. Feasibility Report

In September 1968 BuRec issued the "Shamalan Unit Feasibility Report", recommending that HAVA adopt the proposed plan substantially as presented for full development of the Shamalan. The Feasibility Report reads "it must be emphasized that this analysis is valid only if the provisions are followed and adhered to, but if they are not, no base exists for justifying further investment in the Shamalan Project. Partial or laggard implementation of the provisions, which could include incomplete construction and land leveling ..... will not provide the farm surpluses required to raise living standards or to cover program costs. Partial implementation of these provisions would have the effect of delaying project development and perpetuating subsistence conditions. Conditions which result in lowered returns and incomplete development could not meet the requirements of economic soundness demanded by Section 101 of the Foreign Aid and Related Agencies Appropriation Act of 1963". The essence of the feasibility report and basis of the project was development of a model project, with progress on complete land development concurrent with construction of an additional 148 km. of main distribution canals and laterals and 120 kms. of outlet and lateral drains.

The feasibility report provided for development of 31,399 acres of the total 63,936 acres of classified land in the Shamalan Unit of which only 32,700 acres are classified as arable. The 31,399 acres to be developed, however, is an admixture of arable and Class 6 (non-arable) land, and it will be necessary to develop much Class 6 land to achieve the land betterment goals of the project. Water delivery will be continued to an additional 11,000 acres of Class 6 land that is presently receiving water. Capital cost of the entire package was estimated at $10,578,000, including $870,000 for resettlement costs, a domestic water system and roads. It also included $528,000 for interest during construction, and $540,000 for soil amendments.

Initially it was expected that 14,119 acres of land betterment construction would be completed in the first three years in the Northern and Western Divisions, with the remaining 17,280 acres in the Southern,

Western and Eastern sections in the next two years. All construction was to be performed by HACU with engineering services and administrative support to be provided by HAVA. A BuRec team financed from loan funds was to provide technical assistance, and a number of third-country nationals (TCNs) were to be employed by HAVA and HACU to provide additional engineering and administrative assistance.

An important recommendation of the feasibility report was that a plan be devised for the orderly removal and care of existing farmers from the land to be developed by blocks during the construction period, so that successful and complete development of the lands and project features can be accomplished.

c. <u>Conditions Precedent to Loan 306-H-012</u>

To provide for the dollar costs of the project, AID agreed to provide a $4.6 million loan to finance (a) procurement of new earthmoving equipment and construction materials, (b) parts for rehabilitating existing HACU-owned equipment and (c) services of American technicians. The loan agreement was signed in May 1968. However, in view of the numerous conditions precedent to disbursement of the loan, a final decision to proceed with the loan was not made until the middle of 1971.

One of the most important conditions was satisfied by issuance of a Cabinet decree providing for installment payments by land owners of project development costs and for operation and maintenance costs of the irrigation and drainage system. Another condition was definite plans for the orderly removal and care of existing farmers from land to be developed by blocks during the construction period, and HAVA and the RGA agreed to detailed plans to accomplish this including establishment of a mobile court to resolve appeals by dislocated farmers. Enacting law and regulations were in effect before any loan commitments were made.

The coordinated work plan and supporting schedules as submitted with the Conditions Precedent indicate a five year construction period. However, USAID and BuRec records reflect an awareness before and after final decision to proceed with the loan that the HAVA survey and engineering capacity was not adequate to prepare for leveling, drainage

and substantial work required by the Conditions Precedent. It was also known that HAVA had not implemented an adequate information program to prepare farmers for dislocations inherent in the project, and that this inaction by HAVA resulted from a reluctance to precipitate political issues arising from the land development part of the project in the densely settled North Shamalan area. It is acknowledged by USAID and BuRec that HAVA would prefer to bypass land reconstruction in the North Shamalan, and proceed with construction of the water delivery system to the sparsely settled West Shamalan where there will be fewer problems connected with land development.

Although the foregoing doubts existed, HAVA and the RGA gave assurances that they intended to proceed with implementation according to plan, and that land development would be performed concurrently with the irrigation canal. Acting upon these assurances, AID and BuRec gave final approval to go forward with the loan.

d. Status of Disbursement and Commitments

In August 1972, all except about $280,000 of the $4.6 million had been either disbursed or committed. Due to the lead time required, much of the equipment and spare parts will not be received until the early part of 1973. The amount of the loan earmarked for equipment and spare parts was $3.4 million, and $1.2 million was for services of BuRec technicians and American contract personnel. All except one U.S. personnel are now on duty. According to USAID, BuRec and HAVA there are no appreciable problems in connection with procurement.

e. Conditions Precedent not Implemented

On April 29, 1970 the Mission advised the AID/W Assistant Administrator that village leaders had not been informed of the project and that the Mobile Court of Appeals had not yet been appointed by the Supreme Court. The Mission expressed serious concern at failure of HAVA to start internal measures of organization and preparation for nonconstruction aspects of the project, and that it would be unfortunate if construction on the project were pushed forward before adequate preparation had been made with the farmers. Over two years later these conditions precedent to initiation of the project have still not been fulfilled.

GENERAL

Problems connected with this project have been clearly and continuously defined from the beginning of U.S. participation, only accentuated by the necessity of overcoming the inertia of an underdeveloped economy and society.

Reports and surveys have reiterated the problem of human resistance to change, the seeming panacea of water abundance without adequate control over its use, and a continuing lack of understanding of the absolute necessity for systematic drainage to prevent water-logging and salinization. The cycle of land reclamation followed by abundant production and then despoilation of the land has continued in rapid succession. The history of this project has demonstrated that uncontrolled use of water and inadequate drainage has been and remains one of the main impediments to successful irrigation farming in the Helmand Valley.

In the Marja and Nad-i-Ali areas along the Helmand River land was reclaimed twenty years ago, only to become desolate and abandoned a decade later. In the past five years there has been a dramatic revitalization of part of this area through installation of a system of drainage and improved agricultural practices. During the period of reclamation of Marja and Nad-i-Ali, adjacent areas such as Baba-jee regressed, resulting in a net loss of cropland for this area. However, the Helmand-Arghandab Valley Authority (HAVA) is now installing main drains in the Baba-jee area, and improvement is already perceptible.

A substantial development program was planned for the Shamalan project area on the Helmand River across from Lashkar Gah, but progress has been very slow and has required large inputs of manpower and financial assistance by the United States (U.S.) and the Royal Government of Afghanistan (RGA). Prospects for successful implementation of the land reconstruction phase of this program are not promising since HAVA is devoting almost all its resources to construction of the water delivery segments of the project. There are also other factors which are retarding the land reconstruction.

Irrigation systems in the foregoing areas were initiated by the RGA and constructed by Morrison-Knudsen Afghanistan (MKA) over its objection that RGA emphasis on abundance of water and immediacy of purpose would not result in a balanced system. Present work on the Shamalan not only has to provide for a proper system, but has to supplement much of the earlier work performed at great expense.

Early in 1972 the land development schedule was modified to provide for completion of an initial 1,800 acre section by October 1972. Because survey and design were still not complete, this plan was later revised downward to 150 acres to be finished in September 1972. Plans and specifications for development of the 150 acre tract are still not complete, with consequent delay to around December 1972. According to BuRec estimates, approximately 2,500 - 3,100 acres are now expected to be completed in 1973.

Construction of the initial 150 acre tract may be delayed further, since the farmers have four months in which to examine the completed plans and signify their approval or disapproval. If they disapprove the plan or its effects they have recourse to a Mobile Court of Appeals. The Mobile Court of Appeals has been constituted, but one member remains to be appointed. HAVA is now negotiating with the farmers to obtain their consent and waive their rights to the waiting period.

f. Status of Construction

The only construction now in progress is the New Shamalan Canal. Work on the canal is proceeding rapidly with approximately 11 kilometers of the first section completed. Engineering has been completed and a contract let to HACU for completion of the next 4 kilometers. This will bring the canal almost to the Nad-i-Ali wasteway, a possible source of additional irrigation water to be diverted from the Boghra Canal at the beginning of the wasteway. Total length of the New Shamalan Canal will be 42.7 kilometers.

HAVA is primarily interested in completion of this canal for irrigating a largely undeveloped portion in the South portion of the West Shamalan Project area. HAVA desires immediate water delivery to these areas without waiting for planned and critically needed land development and drainage in the thickly settled Northern and Western sections of the Shamalan area. HAVA was and still is reluctant to complete the land development package simultaneously with the canal construction.

It now appears that unless vigorous HAVA action is taken on land development the entire length of the New Shamalan Canal will be completed before any appreciable land development is accomplished. If water is delivered by the New Shamalan Canal to new areas before

the land is properly developed, a repetition of the experience in Marja and Nad-i-Ali can be expected in land traversed by the canal.

Since HAVA places primary emphasis on construction of the new canal, all except one of its 12 qualified engineers are assigned to designing and assisting in the canal construction. If the overall project development is to be coordinated and land development is to proceed according to plan, most of the HAVA engineers and surveyors should be immediately assigned to the land development phase of the project. USAID and BuRec should consider the advisability of requiring affirmative action by HAVA as a condition to continuation of work on the project.

The urgent need for surveyors and engineers to complete design in preparation for the land construction is apparent from partially developed plans for the initial tract. Vestiges of prior irrigation systems and land alterations are evident, with old irrigation and drainage canals, Class 6 land (non-arrable land), irregular levels and many other factors that will have to be corrected. All of this calls for surveying and design engineering beyond the present assigned staffing of BuRec and HAVA, so that leveling, drainage and sublateral work can proceed.

g. Revised Estimate of Completion

The conditions precedent schedule provided for completion of the entire project in five years. Indications are that at the end of the next five years, land development will be completed in an area of less than 16,000 of the 31,400 acres originally scheduled, and at a cost far in excess of the original estimates. USAID estimates as to project completion vary from 10 years upward and there is agreement that unless AID and BuRec can persuade the RGA to take affirmative action the land betterment aspects of the project will never be completed according to plan.

h. Status of Project Funding

For the Third Five Year Plan period, 1967-71, the HAVA regular operating budget totaled about Afs. 120 million and the development budget totaled around Afs. 384 million. For the Fourth Five Year

Plan HAVA has requested that the operating budget be increased to Afs. 150 million (present value about Afs. 80 equals one U.S. dollar) and the development budget to Afs. 900 million. A development budget of at least this amount will be needed by HAVA for development of the Shamalan Project according to Plan.

Due to a deep cut by Parliament in HAVA's annual budgets for the past two fiscal years, the HAVA budget for both operating and development has been limited to about Afs. 100 million each year. For most of these two years HAVA was forced to operate on continuing resolution authority until Parliament finally acted on the appropriation.

In June 1972 the HAVA General President informed USAID that he does not expect Parliament to provide the requested Afs. 900 million for development expenditures, and that additional funding for the Shamalan Project would have to be obtained from an outside source, probably the United States.

Paragraph 6c of the Loan Agreement provides that HAVA will submit an annual certification of amounts appropriated, within 30 days of the appropriation date. No certification has been furnished for this fiscal year.

The $4.6 million provided by Loan 012 will be expended in two years. At that time, there will no longer be any funding provided for BuRec and contract technical assistance, nor will there be any reserve for parts replacement or new equipment. The conditions precedent to Loan 012 provide that new equipment shall be depreciated at 25% per year on the remaining balance, and that renovated equipment will be written off in 2-1/2 years. We are advised that if new equipment is used at the average rate of 2,000 hours each year, complete overhaul will be required in two years.

From the foregoing facts it appears that additional foreign exchange financing will become a pressing need after the next two years, and possibly before that time. Also, unless the HAVA engineering capability improves drastically, additional engineering services will have to be obtained from outside Afghanistan. BuRec estimates that the cost of a full complement of American design engineers to complete the project according to plan would be approximately $1.2 million to $1.5 million additional.

i. Need for Prompt Action by AID

It now appears that all of the loan funds will be used in constructing the New Shamalan Canal with very little accomplished to develop the land as a model for future development in the Valley, and it is doubtful that objectives of the project will be achieved without substantial additional funding. There is an urgent need for USAID and BuRec to persuade HAVA and the RGA to immediately proceed with land development according to the agreed terms and conditions.

B. Further Land Development

Further construction has been deferred on capital projects throughout HAVR until the Shamalan Project is completed. Instead, studies are proposed for the Arghandab Basin, Seraj and Sanguin project areas, Garmab Diversion and Regulatory Dam, underground water investigations and lower Helmand River projects. There is an immediate need for emergency work in Baba-jee (now in progress), Darweshan, and Seraj areas, and budget requests are being made for funds to carry out this work. HAVA is also attempting to obtain a loan from Asian Development Bank (ADB) to install spillway gates to substantially increase the capacity of Kajakai Reservoir. As a beginning the ADB is making a grant of about $236,000 for a full feasibility study of an irrigation system in the Chakhansoor area (lower Helmand River, near border with Iran) to determine need for the additional water storage, flood control and irrigation. Work on drainage laterals continues in Marja and Nad-i-Ali under the Food for Work Program.

C. Roads

One of the most important indirect U.S. contributions to the Valley was construction of a $53 million modern hard surfaced highway from Kabul to Kandahar, which was completed in 1966. The costs of this highway are not attributed to project since it is a part of the national highway system. The USSR later completed the highway from Kandahar through Herat to the Russian border. One important road construction cost

that has been generally charged against the project was the highway from Kandahar to the Pakistan border completed by MKA in 1949 at a cost of around $6 million. Other roads constructed by MKA were unpaved and cost about $1.5 million. These roads do not include the service roads along canals and drainage ditches. All of these roads have been a benefit to agriculture, the general economy and the people. However, many irrigated farming areas in HAVR still do not have an adequate road system to bring their produce to market, and there has been very little road construction in the past twenty years.

At the present time a team from the Asian Development Bank is making a survey and feasibility study for an unsurfaced road from Lashkar Gah to Deshu on the lower Helmand River. The team is also studying the feasibility of paving the road from Lashkar Gah to the national highway, a distance of thirty miles. If feasible, the Asian Development Bank may make a loan for construction of these roads.

HACU is being reimbursed by the Kajakai electric contractor for grading the sixty miles of dirt road from the national highway to Kajakai. Also, some bridges and access roads are being built as a part of the Shamalan land development program.

D. Capital Infrastructure

1. Total Capital Investment

Total amount of contract payments to MKA for work from 1946 to 1959 was about $77 million of which amount $39.5 was financed by ExImBk loans. In addition, HACU and its predecessor have been reimbursed in an amount of about $10 million for construction work, only a portion of which was for capital additions. An estimated $45 million of the foregoing totals related to irrigation, and the remainder was for construction of highways, bridges, power development, buildings and other expenses. An exact breakdown is not possible since complete records are not available.

2. System not Completed

The planned system of irrigation was never completed because funds were not available, and it became necessary to make drastic revisions of the construction program. Inability to carry out land leveling and drainage resulted in serious complications and abandonment of land in several of the new project areas. Adverse effects are still present today to a large extent.

3. Benefits of Present Investment

The Kajakai and Arghandab Reservoirs have regulated the water supply so that it is now possible to plant two crops a year and to sustain orchards and vineyards in the several drought years prior to 1972. It is probable that most orchards in HAVR would have suffered severe damage in 1971 had it not been for water stored in the reservoirs, particularly in the Arghandab. Major irrigation canals have simplified delivery of water and opened new project areas. A complete drainage system and adequate land forming was not possible due to shortage of funds, resulting in limited benefits to most of the land. However, benefits from the increased and regulated water supply have justified the investment, particularly when combined with newly introduced farming technology.

The electric power potential provided by the reservoirs will be of immeasurable benefit in developing the Region, as has been recently demonstrated in the Kabul area. Without the road construction, benefits of the overall program would not have been attained.

4. Internal Rate of Return (IRR)

Under a personal service contract, USAID is presently attempting to ascertain the IRR on investments in HAVR, especially in relation to U.S. inputs. The investments consist of non-capital (technical assistance, other services, material, organizational support, etc.) and expenditures of capital structures, such as dams, irrigation and drainage canals and roads.

Preliminary efforts toward determining an IRR have focused on returns per acre of land "under water command", which is an inexact base.

Results of the study have not been satisfactory since most of the expenditures were attributed to the agriculture sector which has received primary U.S. aid emphasis. Exhibit B reflects some of the elements which must be considered in computing a meaningful IRR.

5. Lack of Assessments to Beneficiaries

One of the stated objectives of the RGA in committing itself to this project was to generate funds to pay for it. Apparently this was construed as improving the economy sufficiently to obtain additional government revenues through taxation. However, taxes have remained unrealistically low, and collection is ineffective. The RGA and HAVA have not made any charges to users for benefits derived from the capital investment. Therefore, funds are not available from water use charges for further capital improvements nor for operations and maintenance.

Recommendation No. 1

With continued American presence and technical assistance, USAID should stimulate the RGA, HAVA and farmer beneficiaries to establish and carry out capital improvements on a self-supporting basis.

E. Helmand-Arghandab Valley Authority

1. Establishment

HAVA was established in 1952 (at that time it was named the Helmand Valley Authority) to maintain and operate properties owned by the RGA in and near the Helmand River drainage basin in the interest of the national welfare; for conservation, development and use of the region's land and water resources; for land reclamation, settlement and agricultural development; to control destructive flood waters in the Helmand River and its tributaries; and for industrial development and hydro-electric power development. This authority has been broadened to include development and maintenance of facilities for health, education, public housing and municipal development in Helmand Province.

2. Relation to Provincial and Central Governments

HAVA responsibilities extend into four provinces, each of which has a governor, although present projects involve only Helmand and Kandahar Provinces. The General President of HAVA is also Governor of Helmand Province, and HAVA headquarters is in Lashkar Gah in Helmand Province. The RGA Ministry of Planning and Finance exercises budgetary and some policy control over HAVA development operations, and other ministries such as the Ministry of Agriculture and Irrigation do the same in their spheres of responsibility. Governors of the provinces must authorize any services performed by HAVA and HACU in their provinces.

3. HAVA Organization

HAVA is divided into three departments under the presidency. These are (1) Administration, (2) Technical Department with divisions for Operations and Maintenance and for Project Development and Engineering, and (3) Agricultural Department with divisions for Research and Extension, Livestock, Green Forces and Land Settlement, Education and Health. At the present time HAVA has around 2,600 regular employees.

4. HAVA Capability

Over the years HAVA has achieved an organizational structure and generally qualified staff which should have the capability of functioning independently of U.S. assistance, but it continues to rely heavily on USAID. This dependence upon the U.S. to plan and administer is apparent beginning with the earliest studies and reviews.

An area in which HAVA needs especial assistance is formal management training, particularly in affirmative management and decision making. A small U.S. management team could accomplish beneficial results by intensive training in executive, middle and lower level training.

Under a broad economic planning and management contract with AID, entered into in 1964 and ending in 1967, the J. G. White Engineering Corporation assisted HAVA in establishing an organization and

advising on improvements in management and supply practices. From 1968 to 1971, this contractor had only two employees working with HAVA, one to supervise agricultural equipment maintenance and one to establish and implement a program of financial management.

HAVA reports that over 80 percent of its regular budget is normally expended on salaries and related personnel costs, and only about 46 percent of its development budget has been for capital improvements. However, due to fiscal codes and method of accounting, HAVA records are admittedly difficult to analyze.

Although there appears to be adequate staffing for operation and maintenance by HAVA, only a small percentage of the irrigation and drainage system is being effectively maintained. The principal reason given is general obsolescence of equipment, lack of funds for equipment replacement, repair, maintenance and operation. HAVA estimates it needs an additional Afs. 10 million per year for this purpose. Adequate funds would be available if the RGA policy is changed nationally to increase operations and maintenance charges sufficiently to cover these costs in full, and if HAVA is allowed to retain the funds collected in HAVR to be used specifically for continued operation and maintenance. This would involve an increase from the unrealistic assessment of about Afs. 10 (12 cents) per hectare which has been in effect for over 20 years, to around Afs. 450 ($5.30) per hectare. Afs. 450 represents about seven percent of current gross farm costs, and direct benefits to the farmer are calculated to increase disproportionately to that amount.

The Agriculture Department has achieved some success in recent years in assisting farmers to increase production and income, although it has depended heavily on U.S. assistance to achieve this success. The Extension Division has insufficient qualified extension agents and lack of funds for transportation has inhibited activity. The HAVA Experiment Stations are almost idle except for demonstrations carried out by USAID technicians.

The Project Development Division operating costs are now around Afs. 4 million per year, with a planned increase to Afs. 10-20 million per year. Most of the project development engineering has been performed directly by BuRec.

The Engineering Division has a shortage of qualified engineers attributable to low salaries and remoteness of the area. There are more than 150 employees in this division, but **many** of these are laborers or not well qualified. Repeated but unsuccessful efforts have been made to hire persons who can be trained as practical engineers. Aside from work on the new Chamalan Canal, BuRec employees have been doing almost all the land development work which should be done by this division.

HAVA has responsibility for operating 22 schools and the Lashkar Gah Hospital, but its budget has not permitted proper operation.

In its Fourth Five Year Plan, HAVA has proposed steep increases in both regular and development budgets in all categories. However, the HAVA General President does not believe Parliament will be receptive to the proposed increases, nor does he consider likely any other plan to increase HAVA revenues.

It is doubtful if sufficient funding alone would enable HAVA to operate efficiently. There are many shortcomings built into the system which are inherent to an underdeveloped country, and some that are unique to Afghanistan. Although the "counterpart" system has been used by USAID for many years, it has not produced the intended objective of creating self-reliance. The counterpart relationship is often ineffective, with the counterpart in many instances leaning too heavily on the USAID or BuRec technician. There are also deep-rooted customs which work against efficient operations.

Recommendation No. 2

It is recommended that USAID/A, in agreement with HAVA, propose to AID/W the establishment of a program to provide a contract team, or other appropriate means, to train HAVA and HACU executive, middle and lower level managers in management techniques and decision making.

5. Influence of National Policies

The RGA is a constitutional monarchy with a Prime Minister and Parliament, but the prime source of governmental power remains with the King. The constitution provides that Sunni Islamic Law (Shariat) is

There is also an apparent lack of commitment by HAVA and the RGA to move ahead on water management which is essential to maintaining productivity. Except as provided for land restoration in the Shamalan, there will be no assessment to owners for their proportionate share for direct benefits to the land; land taxes are unrealistically low; there are no charges for operations and maintenance of drainage ditches; and, a charge for delivery of water to farmsis unacceptable to HAVA and the RGA due to possible farmer opposition, although it would create revenues for operations and maintenance and further benefits.

Success of the recent harvests has placed farmers in a position of ability and willingness to invest in machinery and equipment, new crops and varieties, land improvements, and new farming methods in general. It would appear that this would be an appropriate time for HAVA and the RGA to approach farmers with an educational program to persuade them to pay for improvements directly benefiting them.

For many years the RGA appropriated approximately 20% of the government's total expenditures for this project. Other areas of the country became concerned over use of the limited available revenues to this restricted area and the RGA necessarily curtailed its contributions to the Helmand-Arghandab Valley Region (HAVR). Accentuating the problem, the RGA contribution to the project required a large percentage of available foreign exchange without correspondending creation of exports to gain foreign exchange. The problems of foreign exchange burden and domestic resource mobilization are presently too great to permit RGA completion of the capital structure necessary to achieve goals of the program.

The original intention of the RGA was for the project to generate funds to pay for development costs. There has been an almost complete failure to implement this policy by practical assessment procedures, although the benefited land-owners are now in a position to begin to provide financing needed to put the project on a sound financial footing. Political considerations will continue to inhibit voluntary moves by HAVA and the RGA to achieve a self-supporting policy. Funding from the U. S. and multilateral sources will not be sufficient to keep the project viable except through an increased technical assistance program designed to increase agricultural production under existing adverse conditions.

the basis for the government, and in the absence of specific legislation the Shariat is interpreted and applied by the courts.

National policy on water rights has been established based on interpretation of Islamic law. The interpretation precludes adequate controls over use of water, even for irrigation charges which are considered normal in other Islamic countries. Under this policy HAVA does not have the authority to institute measures to ration irrigation water or otherwise direct its usage, nor can it make charges for delivery of the water. The national government policy tacitly makes it impracticable to increase charges for operations and maintenance or to increase taxes.

The foregoing policy appears to be based more on practicalities than on strict ideology, with every effort made nationally to avoid changes which might cause unrest. Afghanistan remains a strongly tribal society and the tribal leaders exert strong influence on the government. Throughout the HAVA area tribal leaders determine allocations and control over water, operations and maintenance. The King and his government are quite sensitive to opinion and complaints voiced by tribal leaders.

National policy is also reflected in the nature of the people, and partly in the competitive position afforded by aid projects of other countries. The USSR offers plentiful assistance and appears to encourage Afghans to rely on Russian direction and management of projects.

F. Helmand-Arghandab Construction Unit (HACU)

HACU was established in 1954 as a department of HAVA to handle construction after MKA services were terminated. It was later made a separate agency and contracts with HAVA on a reimbursable basis for construction of irrigation and drainage laterals and sublaterals, accumulator and local drains; for land leveling and preparation, and for major repair work on the irrigation and drainage system. Upon authorization of HAVA, HACU also constructs roads and public buildings and makes major repairs.

MKA transferred to HACU an initial staff of technical and skilled personnel and a substantial quantity of construction equipment. A part ($3.3 million) of the 1954 ExImBk loan was used to purchase additional equipment and to finance foreign supervisory and technical personnel. By 1956, HACU had around 900 employees, approximately the same as today.

HACU has accomplished relatively little in the way of initial construction and its major contribution was in preparing limited drainage systems in Marja, Nad-i-Ali and the Arghandab. Reasons given were obsolescence of equipment received from MKA and insufficient funds for parts and new equipment. Most of the funds received by HACU (except for ICA, ExImBk, and AID assisted procurement of equipment and parts) have been used for maintaining the large organization. It is estimated that HACU operations have cost around $10 million equivalent since 1954.

Under the Loan 012 agreement HACU will receive rates for the sale of its services to HAVA based on all operating expenses, including maintenance and depreciation in accordance with sound accounting practices. At the stipulated depreciation rate for new equipment of 25 percent per year on the remaining balance, and 2-1/2 years write-off on renovated equipment, HACU should be in a better position to function in the future. This assumption, however, is contingent upon the extent of use of equipment and quality of maintenance exercised after the loan-financed U.S. Equipment Technicians leave in two years. It is also dependent on future availability of foreign exchange for parts and replacement.

HAVA is presently indebted to HACU in the amount of about Afs. 14 million for past services. Since HACU is dependent solely on income from contract services, there is a need for HAVA to effect settlement as soon as possible. However, it is unlikely that HAVA's financial position will improve sufficiently in the near future to permit them to effect settlement.

G. Development of Agricultural Capability

The Kajakai and Arghandab dams have more than doubled the usable supply of water for irrigation, as well as extending availability of water over the entire growing season. During the late summer of 1972 it was observed that most of the productive acreage was planted in corn, cotton, mung beans or other crops following the wheat harvest in June. This trend began about five years ago with introduction by USAID of earlier-maturing wheat which made multiple cropping feasible.

Although most cultivation and harvesting is still done with small oxen and plow, credit made available through combined efforts of the RGA, AID and the International Bank for Reconstruction and Development (IBRD) has enabled farmers to buy an increasing number of tractors and other agricultural inputs. Improved agricultural practices are resulting from USAID demonstration practices adopted by the more progressive farmers who are then imitated by neighboring farmers who observe their success.

Due to the foregoing factors, the past three crop years were an outstanding success for HAVR farmers. The high yields of wheat, harvested by some farmers much earlier than wheat in other areas, sold at premium prices due to the national wheat shortage resulting from several years of drought. As a result, HAVR farming has been raised from a general subsistence level to relative prosperity.

The improved economic status has made farmers more receptive to new ideas and willing and financially able to try new methods. More farmers have planted acreage to higher value horticultural crops such as grapes, and the trend is increasing rapidly this year. Cotton acreage is also expected to increase proportionately with mechanized farming if appropriate policies are adopted. Although wheat was a valuable income producer this year, irrigated cropland can and should be used for high value crops.

The existing poor control over use of water was more perceptible this year because of increased second crop plantings. In July and August heat, evaporation and transpiration of water is a serious problem. In many areas, even with an abundance of water at the canal head, many farmers near the end of irrigation laterals do not have a reliable water supply for a second crop. Many considerations, especially political, social and cultural, result in discrimination in use of water.

The second crop trend has also produced other problems which may not be overcome until mechanized farming becomes prevalent. With a steel-tipped wooden plow drawn by small bullocks, and soil badly crusted by summer heat, farmers are not able to prepare good seed beds. Also, summer weeds are difficult to control with bullock drawn implements, and the weeds out-compete most second crops.

It was observed that uneven levels in irrigated fields resulted in erratic growth of plants, with those in lower levels drowned out and in higher levels not receiving sufficient water and stunted in growth. This is a serious problem in the Shamalan, Marja and Nad-i-Ali, where the generally water-logged soils also cut down on production.

The transportation system has developed rapidly in HAVR and trucks and buses are available between farm areas and markets in most areas. Flour mills have increased in number and capacity and appear to be adequate. Large stocks of government owned fertilizer were observed.

There is a pressing need for development of an export marketing system to complete the transition to high value crops. The export potential and likely destinations are recognized, but past and present efforts have not been successful. Several attempts have been made to establish food processing plants to facilitate exports, but these have failed for reasons such as poor management, inadequate quality control and lack of observance of minimum sanitation standards.

During site inspections in June, July and August it was observed that considerable tracts of land in developed sections were not cropped in 1972, particularly in Helmand Province. Some of the uncropped land was obviously water-logged and salty. In contrast it was observed that fairly large acreages were planted to wheat and cotton on out-of-project landswith an intermittent supply of water where water-logging and salinity conditions were not present.

The foregoing presentation gives an idea of the seriousness of the twin problems of water-logging and salinity in the project areas. Too much water applied to land near the source and too little water available at the end of canals and down river has reduced cropland and production in project areas to nearly half of the potential. A large percentage of this lost acreage and production could be restored through the simple expedient of controls over use of water.

H. Role of HAVA in Agricultural Development

1. Extension

The HAVA Extension Service does not have sufficient qualified district agents or back-up staff, and organizationally an aggressive approach and interest is lacking. Due to the large geographical area to be covered in HAVR, transportation is vital in contacting farmers. At the district agent level this is usually accomplished by use of bicycles and motorcycles which in itself is a limiting factor. The budget for the past year has been inadequate to provide for even this meager transportation. Through use of counterparts in Extension, the USAID agricultural staff has provided limited but intense contacts between Extension Service and farmers. HAVA has only limited authority over the small Extension organization in Kandahar Province.

2. Research

With USAID technical assistance HAVA has established several experimental research farms. Observation of these farms in June, July and August 1972 reflected a very low degree of utilization. Virtually all activity of note was performed by USAID technicians. The Research Division has 386 employees who did not appear to be actively engaged in work at the stations and farms, and there was little evidence of activity. HAVA has indicated that some experiment station land will be leased to private farmers to produce improved seed for the seed increase program during the Fourth Five Year Plan.

USAID has concluded that the research physical plant is excellent, but the research capability is limited. They have suggested that immediate action be taken to extend the proposed National Research Program to the HAVA area. USAID has also recommended continued U. S. support for participant training, commodities and advisory assistance in agricultural research.

Livestock research was organized about 12 years ago to promote improvement of cattle, sheep and poultry in the area. There is a difference of opinion among USAID agricultural advisors about the success of this program, but statistically it shows very little progress and many research "leads" have not worked out. The staff for this activity is 126 employees.

3. Planning and Statistics

The HAVA office for planning and statistics was unable or unwilling to furnish any statistics requested. Figures attributed to this office were found to be generally unreliable, and USAID has reached the same conclusion. Aerial photography planned for this winter should provide an accurate base for determining cropland and its application. There are no reasonably accurate statistics at present on the number of acres irrigated, cultivated, double-cropped or type of crops planted.

4. Land Settlement

USAID and BuRec consider that this division is not operating effectively at the present time. They expect to discuss the situation with HAVA in an effort to resolve the difficulties.

5. Other HAVA Activities

Most of the other HAVA divisions are administrative. Divisions are also set up for Plant Protection, Agricultural and Rural Development and Power Industry and Commerce, but only the latter department has any degree of activity. As agricultural productivity increases through use of fertilizer, new varieties, horticultural crops and improved agricultural practices, there will have to be a much stronger plant protection program because of increased susceptibility to plant pests of all kinds. Agricultural and rural development is an important part of the overall development package, and this program should be more active.

6. Water Management

Management of water resources is among the most important of HAVA's responsibilities. USAID has presented many ideas and suggestions to HAVA for water management, but there has been only minor action. One of these suggestions is constitution of water users associations (water districts) using the existing informal tribal groups as a base. Another idea is on-farm demonstrations showing the advantages of efficient use of water.

One of the most immediate and pressing changes that would increase the effective supply of irrigation water is use of night irrigation. With little or no irrigation performed at night the water in the irrigation canals flows unused into the wasteways and returns to the river. En route much water is lost by seepage and evaporation. A 24-hour system of controlled water use would be the least expensive method of extending the available water supply.

Farmer education, training of ditch riders and development of farmer cooperative effort are needed to effect substantial progress. U.S. technical and advisory assistance are necessary to stimulate HAVA action toward these important goals.

Project Appraisal Reports and other documents since the beginning of Project -090 (and earlier) have emphasized accomplishments in achieving project targets with the exception of water management. The latest reports continue the theme that lack of proper water management is the major obstacle in achievement of an efficient irrigation project. Despite constant exhortation by USAID and BuRec officials, HAVA and the RGA have made few efforts to place restrictions on use of water, except for a pilot project in Marja. As a result, many farmers use excessive amounts of water, thereby producing serious drainage problems with consequential water-logging and salinization. The water-logging also causes rotting of the crop root area, and when used at the wrong time promotes growth of weeds.

Since a large percentage of irrigated farm land in HAVR is tied in to some extent with old privately constructed systems, proper apportionment of water is difficult to establish. However, in new areas which were designed for water control there is still no effort made to assure proper water use. The only promise of improvement in water management is a statement by responsible HAVA officials that water use will be regulated in the Shamalan Project when it is completed. There has been little effective effort to demonstrate to farmers the advantages to them of good water management.

I. Development of Electric Power

1. Kandahar and Girishk Power Plants

Prior to 1950 Kandahar was the only location in HAVR with electric power, and this facility was small and unreliable. As a part of its work on the Boghra Canal MKA built a small hydroelectric plant (about 2,400 kw) near Girishk and related transmission lines to the Girishk, Chah-i-Anjir and Lashkar Gah areas. The Germans also built a small hydroelectric plant on the South Canal near Kandahar.

Harza Company of Chicago and the National Rural Electrical Cooperative Association had contracts, to rehabilitate the regional electrical distribution system between the Girishk Power Station, Lashkar Gah and Kandahar. Some of this contract work was performed under Loan 306-H-003 for $5.75 million for miscellaneous projects. Repairs, surveys and maintenance training were also carried out.

2. Kandahar Diesel Electric Generators

Loan 306-H-009 made $800,000 available for installation of two 1,500 kw diesel generators to service Kandahar until electricity from the Kajakai facility is available. This project is complete except for continued training. R. W. Beck and Associates is the contractor.

3. Arghandab Power Feasibility Study

When the Arghandab Dam was built, a power tunnel was constructed to permit later installation of four 3,200 kw hydroelectric units. Twenty-five percent of cost of the dam, or about $1.8 million was allocated to the power potential. A later feasibility study financed by an AID loan reflected that water run-off in some years was insufficient to operate the units, with the conclusion that it would be more feasible to develop the potential at Kajakai Dam.

4. <u>Kajakai Power Project</u>

When Kajakai Dam was being constructed, two tunnels were built and served as diversion conduits during construction. One of the tunnels was plugged and the other has operated as an outlet for irrigation water. The feasibility study revealed that there is sufficient water to provide at least 22 mw of firm power. With reregulation and installation of a gated spillway, the firm capacity at low water is estimated to be 66 mw which would require a total of 150 mw of installed generating equipment for developing optimum power.

On May 13, 1968 the RGA and USA entered into Loan Agreement 306-H-013 (Project Number 306-22-120-101) for construction of the Kajakai Hydroelectric Power Plant. The loan was not to exceed $12 million, of which no less than the approximate sum of $1.5 million would be reserved for the purpose of financing consulting services for the Training Program, and the balance for goods and services.

In June 1972 the RGA contracted with Fischbach-Oman International, a joint venture of Dallas, Texas, for construction and installation of the power plant. The contract calls for installation of a two 16.5 megawatt unit hydroelectric generating plant at Kajakai Dam. Most of the preliminary details to construction, such as letters of commitments and orders for equipment, have been completed. The contractor occupied the camp site at Kajakai Dam the week of August 6, 1972, and site inspection showed that preparatory work was progressing rapidly.

During the latter part of June 1972 the tunnel gates were opened to draw down the reservoir water level so that the blocked tunnel could be opened and valve installations made. By November 1972 the water level is expected to be low enough to permit work on this phase. The draw-down will be repeated next year.

The contract calls for completion of the work in three years, but there is no penalty clause in connection with this provision. According to the USAID Engineering Officer, it will be at least 15 years before there will be substantial use of the 30,000 kw output of the Kajakai Power Plant. At the present time there are less than 8,000 electric connections in Kandahar and Helmand Provinces out of

a total population of 1.5 million. Projections of future usage in a Capital Assistance Paper issued April 25, 1967 have been accurate to date, with a further expected increase of about 20 percent through 1978.

Based upon present operating methods of the power authority it is doubtful if it will become self-supporting. Charges for electricity are inadequate to meet expenses or to maintain a reliable system, and most users are delinquent in payment. Lengthy procedures are required before cutting off service, and poor collection efforts have resulted in reduced revenues. There is clear indication from all sources that this situation will not be changed.

Dual use of Kajakai Reservoir water for power and irrigation may be expected to create future problems over priorities during low water years and periods of peak requirements. It is suggested that USAID and BuRec work with appropriate authorities in the RGA, HAVA and the provinces concerned toward immediate establishment of an independent regulatory authority to maintain proper control over release of the water. This problem is very closely connected with conservation and management of irrigation water.

Cost of completing the project to the point of a direct internal rate of return (IRR) commensurate with cost of the capital investment will amount to many times the total expenditures to date. Due to lack of completion of the total irrigation system, only 10-20 percent of existing cropland in HAVR receives substantially full benefits from that part of the capital investment relating to irrigation, although most of the cropland receives varying degree of benefits including an assured year around supply of water to most farms.

The active project area encompasses two provinces, each with a high degree of political autonomy. The Helmand Province Governor is General President of HAVA, and his concern appears to be primarily that of his constituency. Also, the Governor of Kandahar Province must approve HAVA activities in his province.

Capital investment costs apportioned to the HAVR irrigation system mainly affect Helmand Province since the Helmand River is a significantly greater source of water than the Arghandab River in Kandahar Province, and most of the project land reclamation areas are along the Helmand River. Future development of irrigation systems and attendant benefits will be almost entirely in Helmand Province. However, electric power to be made available from the plant under construction at Kajakai Dam is of importance to Kandahar Province since most of the industrial development is expected to be in that province.

J. Industry and Future Development

Surveys, studies and observation of trends indicate that economic development in HAVR will be agro-oriented in the foreseeable future, although availability of an assured electric power supply from the Kajakai installation, plus plentiful labor and other factors, could attract other types of industry such as Kabul has been experiencing during the past two years.

According to USAID studies, the volume of agro-business in 1965 was very small, with virrtually no sales of tractors, fertilizer, pesticides or other farm requisites. Fresh fruit exports, however, amounted to about $1.0 million equivalent.

Exports of pomegranates and grapes to India in 1970 amounted to about $7 million, and this was increased further in 1971 and 1972. Some raisins are exported, possibly $1 million in value. These are virtually the only foreign exports from HAVR.

About 10 years ago a large fruit processing plant and cannery was built with Czechoslovakian aid, but it was closed primarily through failure to maintain sanitary standards which caused loss of markets for its produce. On two occasions U.S. advisors have surveyed the plant with the conclusion that much additional modernization would be required to make it profitable. Cost of the plant was several million dollars equivalent.

A large modern leather tannery in Kandahar, financed with local and British capital, is 90 percent completed, but construction has been halted for two years. Afghanistan, except for Karakul skins, does no leather tanning for export, and exports raw hides.

A large German-built elevator and flour mill has just been completed in Kandahar. Several years ago the British financed and still operate a $5 million cotton oil mill in Lashkar Gah, but it has always operated at a loss because cotton production in HAVR is too low. Production will have to be quadrupled before the mill becomes profitable.

A fertilizer manufacturing plant has been suggested, using power from the Kajakai facility, but apparently there are no definite plans.

However, there has been a very large increase in the regional economy because of the favorable agricultural picture described in preceding sections of this report. The business communities in Kandahar, Lashkar Gah and the small communities reflect a brisk trade that has developed in the past five years, all generated by increase in the regional agricultural product. There is constant movement of trucks, buses, automobiles, tractors, motorcycles, bicycles blended with the older modes of transportation, while very low mobility was reported five years ago. Municipal facilities have been modernized and there is a general air of improved prosperity.

USAID projections predict a four-fold increase in the volume of agro-business in HAVR in the next five years, but little or no increase in industrial development during the same period. When electric power becomes available from the Kajakai power plant around 1975, it will probably attract industry to the area. There is a large surplus of manpower and the excellent national highway connects HAVR with potential markets in the Middle East and Central Asia. Many large European corporations have already established plants in Kabul and surrounding areas for manufacturing or assembly of plastics, chemicals and other products for the Central Asian market.

K. General Economic Considerations

1. Perspective

The RGA capacity to incur fur rther indebtedness, particularly involving its foreign exchange position, is summarized in the following paragraphs. Exhibit A contains a more detailed account of the RGA financial position.

2. RGA Revenue

Total RGA revenue in 1971 fiscal year was Afs. 6,870 million (about $86 million), and this included $13.1 million equivalent from the sale of aid financed (or grant) commodities. The total revenue received in 1971 was one-third greater than that of 1967.

3. Balance of Payments

Several unusual factors resulted in a surplus of $15.4 million in 1971 fiscal year in balance of foreign payments, including aid commodities received and special drawing rights allocated to the RGA. In 1968 there was a deficit of $10.9 million. Imports of trade merchandise have far exceeded exports, but this deficit has been balanced somewhat by services and transfers.

4. Foreign Debt

As of March 20, 1972 on direct loans and RGA guaranteed loans payable in foreign currencies, the RGA was obligated in the net amount of $744 million, of which it had received disbursement of $609 million. Of the amount obligated, $533 million was from the USSR, $85 million from the U. S. and $126 million from other countries. Part of the U. S. indebtedness is to U. S. banks for planes and other expenses of Ariana Airlines.

5. Foreign Debt Servicing

For the 1972 fiscal year the RGA budget provided Afs. 1,140 million, or $14.25 million, for servicing foreign debts. This was up from Afs. 601 million, or $7.5 million in 1969. There are indications that the RGA debt servicing cost will increase at a rapid rate on the present obligations.

6. Status of U.S. Loans Pertaining to HAVR

U.S. loans affecting HAVR (except for Kandahar International Airport and the National Highway) have totaled $62.45 million, including the recent loans 012 and 013 totaling $16.6 million. Repayments have totaled $21.04 million as of March 20, 1972.

7. Gross National Product (GNP)

A government publication "The Survey of Progress" gives the GNP for fiscal year 1971 as Afs. 62.3 billion, around $800 million.

L. Farm Size Factor

Much emphasis has been placed in earlier reports and proposals on the need for an increase in size of individual farms. BuRec recommended earlier that the minimum cropland acreage in the Shamalan be established at 22.2 acres to properly carry out mechanized row-crop farming. In view of social and family patterns and established land ownership it was neither feasible nor possible to effect this change at start of the project, but it is a long range goal. Results have been accomplished by other methods to make smaller land holdings economically feasible.

When BuRec's criteria was established wheat yields per acre in HAVR were much lower than in 1972 and double cropping was not significant. Also, the price of wheat in 1972 was double that in 1967 when the feasibility report was made and the criteria established. With the foregoing factors, cropland farming on acreages smaller than 22.2 acres is now profitable and above subsistence level. Even in the U.S. some of the most highly profitable specialized farming is on very limited acreage, and some of the most unprofitable is on large acreage. It is obvious that utilization of the land is most important in determining profitability.

The 1970 FES reflected that the average farm size on farms reporting in the Arghandab (Kandahar) area was sixteen acres with an average cropland of only nine acres per farm.

Because of more intensive cultivation, concentration of orchards and vineyards, and planting of higher economic yield crops, the average land value in the Arghandab area was more than ten times as great as in Khanishin project area in the lower Helmand which had the highest average size of 67 acres per farm with 45 acres of cropland. This reflects the higher economic yield based on utilization of land. The Arghandab area has one of the smallest farm size averages in the HAVR.

The number of people to be supported on each farm is also a very important consideration in determining if the family can derive sufficient income to exceed a subsistence level.

Fertilizer has now been made available in larger quantities to meet the increasing demand of farmers. This has had considerable impact on the increasing yield per acre and in double cropping. It is no longer necessary for land to lay fallow to permit symbiotic fixation of nutrients, and land can be cultivated continuously. A farm of 22.2 acres with half the land fallow is obviously not as productive as a smaller acreage which is being farmed intensively.

M. Settlement and Social Development

1. Settlement of Nomads

Many political problems affecting the RGA began in 1947 with Indian independence and creation of Pakistan. The resulting institution of strict nationalistic border controls interrupted the centuries-old annual migrations of the Pashtun people from summer grazing lands in the high mountains of Afghanistan to winter grazing and trading in what is now Pakistan and India. Since then the RGA has made efforts to settle these nomads in different sections and in various ways.

One of the first and most important stated objectives of development in HAVR was to provide opportunities for these nomads to settle in the newly irrigated areas of Marja and Nad-i-Ali. The RGA subsidized the new settlers, but due to many reasons the program was unsuccessful and most of the nomads deserted the land. As discussed previously, inadequate development for irrigation was the primary cause. Contributing factors were lack of cropland farming expertise and a general preference for their old way of life.

However unsuccessful the efforts to make farmers of the nomads, the RGA and U.S. accomplishments in HAVR are recognized as having extensively and materially benefitted the nomads. While preserving their freedom of movement the nomads are increasingly engaged in seasonal farm labor, graze herds and flocks along canal banks and on marginally irrigated land and engage in trading. Some members of each family or tribe have begun the practice of staying

in the low country during the summer, and other members of the family move to the mountains with part or all of their animals. During the summer of 1972 this pattern was quite perceptible, with nomad encampments all along the fringes of irrigated areas in HAVR. Large numbers of the nomads' sheep, goats and camels were in evidence. Interviews with some of the nomads disclosed that with an assured water supply in the summer in HAVR, an increasing dependence on farm labor and livestock exchange for farmers' commodities, more of them are remaining stationary each year. This trend has also been reported in USAID studies.

2. Health and Sanitation

A U.S. grant of $500,000 and Afs. 6 million from P.L. 480 Funds enabled HAVA to construct and establish Lashkar Gah hospital, a 50-bed medical center which is also public health headquarters for the region. Each year between 15-20 thousand outpatients are treated at the hospital clinics. Peace Corps Volunteers assist in the health program. Supplementary health programs and facilities have been made available in the region. The United Nations and World Health Organization programs have provided assistance and technical training.

A safe water supply was provided by U.S. assistance for Lashkar Gah, but inadequate maintenance has made it questionable. U.S. technical advice and a small quantity of surplus U.S. material resulted in development of a safe water supply in Kandahar for limited public distribution. Lack of sewage disposal in the populated areas of HAVR is a serious problem.

According to health records, one of every two babies born in HAVR dies in infancy. Most deaths, diseases and disabilities are attributed to gastro-intestinal problems caused by polluted drinking water and prevailing unsanitary conditions.

3. Education

Since 1960 HAVA's Department of Education has opened in Helmand Province 12 village schools, nine elementary schools, one junior high and one high school, with some direct U.S. assistance. Total enrollment is about 4,000 students, only a small percentage of those eligible. Many farm families will not permit their children to attend school since it would take them away from their farm duties.

HAVA does not have responsibility for education in Kandahar Province, where the latest official estimates are that 29 percent of boys and 5 percent of girls in the 7-12 age group are attending school.

In Kandahar there is a teacher training center, and the Kandahar Technical School there is staffed by instructors from the Republic of West Germany.

N. Present Multilateral Assistance

West Germany has recently completed the large elevator and flour mill in Kandahar and operates the Technical Training School there. The Germans also have a Peace Corps Volunteer program in HAVR. The British are still operating the unprofitable cotton oil mill in Lashkar Gah.

The IBRD (IDA), as a part of a $10 million loan to the RGA, is providing funds to the Agriculture Finance Agency (AFA) for financing sales of tractors and other agricultural inputs in HAVR. In 1970 AID provided the initial funding of Afs. 48 million (under AID Loan 306-H-008) to establish AFA which is a subsidiary of the Afghan Agriculture Development Bank. AFA has a team of foreign advisors working in operational positions (funded from an IBRD loan). AFA is also assisted by a USAID farm credit advisor stationed in Lashkar Gah who is working on a program to improve and simplify loan processing procedures.

The Asia Foundation has assigned a full-time horticulturist (American) to work with USAID in HAVR.

The Asian Development Bank is now conducting a survey to determine feasibility of building new roads and paving the main road to Lashkar Gah.

O. Possible Future Courses of Action

1. Nature of Project

Even under favorable circumstances existing in the U.S. and other developed countries, completion of a project of this magnitude would require many years, formidable organizational and financial resources and a social and political acceptance of the responsibilities entailed. The estimated $45 million thus far expended on the irrigation framework is only a fraction of the cost of completing an acceptable modern irrigation system for the entire 500,000 irrigable acres. Insufficiency of required inputs to complete the system should not be regarded as a failure, but all factors should be considered before the U.S. provides further capital assistance, particularly for additional development of the irrigation system.

Of particular importance is failure of the RGA to put its capital investments on a self-supporting footing which would generate funds for a continuation of work towards completion. Another factor is unwillingness to institute needed measures for conservation and management of already developed land and water resources. First, there must be a consolidation by HAVA and the RGA of existing gains.

2. Establishment of Long Term Goals

With innate uncertainties of the U.S. aid position in general, combined with conflicting considerations on the part of the RGA, it is difficult to arrive at firm plans to cover long term goals toward completion of the entire system. Feasibility studies have been made by USAID, BuRec and HAVA to determine which project areas can be developed at the lowest cost, but a logical framework has never been developed for overall development with clearly defined physical goals.

AUDIT REPORT
COMPREHENSIVE REVIEW OF UNITED STATES ASSISTANCE IN THE HELMAND-ARGHANDAB VALLEY REGION (HAVR) AFGHANISTAN

As of October 31, 1972

PART I

PURPOSE AND SCOPE

The Office of the Area Auditor General, Near East, at the request of the ASIA Bureau made this special comprehensive review of progress and development of the Helmand-Arghandab Valley Region (HAVR) project and AID participation in the project. The request was for an in-depth operational review to measure accomplishments versus goals. We have also attempted to bring to Management's attention significant areas affecting attainment of U.S. goals in HAVR.

In order to maintain a perspective for the reader, brief accounts are included on history, objectives and other background information from the beginning of the project. Primary emphasis was, however, devoted to problems and accomplishments of the past five years, the existing situation, and what may be expected in the future, based on present indications and past performance. The analysis of present implementation of the project considered engineering, agriculture, construction, management and operation, coordination of activities, effectiveness of planning and execution of programs for achieving maximum utilization of present and potential benefits. There was a measurement of the degree of compliance with original and amended objectives of the project, and an examination of existing realities.

We held discussions with Mission, Helmand-Arghandab Valley Authority (HAVA), and Helmand-Arghandab Construction Unit (HACU) officials and an intensive review was made of surveys, reports and files from the beginning of the project. Visits were made to the various projects in the region to observe present conditions as they relate to the records and discussions.

Recommendation No. 3

That USAID/A propose to AID/W that formal recognition be given to the high cost and long-range nature of any large reclamation and irrigation project and this project in particular, and the necessity for continued technical assistance to fulfill the humanitarian needs and assure success of the heavy U.S. investments in effort, money and reputation. Based on this policy, that interim AID goals and planning be established within the framework of the Five Year Plans of HAVA, HACU and the RGA.

3. Limitations on Further U.S. Capital Investment

The HAVA President has stated that the RGA has other pressing priorities which will not permit additional heavy expenditures in HAVR, and especially if it involves foreign exchange. The HAVA President reiterated that land owners and farmers would not be responsive to new or additional assessments, particularly for water use or management. This effectively eliminates Afghan inputs required to properly maintain the present system or to make further capital improvements (except for a limited time using equipment resources acquired under Loan 306-H-012).

The 1970 Farm Economic Survey reported that values of irrigated lands in HAVR have increased many-fold in recent years and are still rising, but land owners are not paying for the benefits they receive from the capital investment which has increased the land values.

Until a realistic system of self-support is worked out by the RGA and HAVA, the U.S., by loan or grant capital assistance, is not really benefiting the country. The amount of U.S. assistance available over the years for improvement of the irrigation system would be insignificant in relation to what needs to be accomplished, but as long as we remain in even a limited capital assistance position the RGA will look to us and defer needed self-action.

The RGA financial condition (Part IV, Section N.) reflects that debt servicing on present obligations to foreign countries is approaching a serious level. If we are to benefit the RGA, all future U.S. loans should bear a direct relationship to an immediate increase in foreign exchange income.

Recommendation No. 4

That USAID/A provide in future project proposals that as a condition to further U.S. capital assistance in connection with the irrigation system in HAVR, HAVA must make substantial concrete progress in the establishment of an overall realistic system of charges for services in connection with delivery of water and for operations and maintenance, and establish an effective system of water control.

4. Increased Technical Assistance

A sharp distinction must be made between U.S. capital assistance for the irrigation system and that for technical assistance in the fields of agricultural production and marketing, particularly as the assistance relates to horticultural product such as fruits and other exportable items. Lamb and mutton meats are in demand and bring premium prices in mid-eastern countries, and technical assistance in marketing preparation and development should have U.S. priority since HAVR and Afghanistan have an immediate potential to realize foreign exchange on these products. Farmers in HAVR have begun the practice of buying and feeding livestock, primarily lamb and mutton.

BuRec specialists have been helpful in the past in connection with the irrigation system. In the U.S. the BuRec responsibilities, training and general qualifications extend only to the main lateral irrigation system and in HAVR their work has been mostly limited in the same fashion. Their small numbers and specific assignments have largely prevented working on farm water management development, although they are to be commended for personal efforts they have made working with farmers.

In the U.S. the technical assistance responsibility for on-farm water management, irrigation farming and practices are divided between or shared with organized irrigation district organizations, State Extension Services and the Soil Conservation Service. A large contract team of experts from one or more of these groups could make a contribution in HAVR by introducing applied techniques to HAVR farmers for working with an inherently deficient irrigation system.

Agriculture and irrigation in the Imperial Valley of California is quite similar in size, climatological factors and scope of irrigation to that in HAVR. Water logging and increased salinization are also serious problems in the Imperial Valley, but modern technology has been able to overcome some of the problems by various methods which can be carried out by farmers themselves including planting special crops resistant to salt, alkalinity, water-logging and other adverse conditions. In view of the realities which will continue to exist in HAVR, it is essential that farmers be taught to improvise methods to circumvent shortcomings in the system.

A well-organized contract team of experts in various technologies under a Chief of Party could supply cohesive and effective technical assistance at the farmer level. A contract team of this type could also provide a continuity which has been lacking in Project -090, where technicians have been limited in number and selected on an individual rather than team basis. The advantage of a large, carefully selected team would be that it would provide a farmer-oriented working group of established competency in needed specialities. The team would also bring benefits of the latest research and proven methods under climatic and soil conditions similar to HAVR.

If this approach is adopted, the team should be stationed at various locations throughout HAVR. In the past our technical assistance to farmers has been rendered relatively ineffectual because the technicians were stationed in Lashkar Gah which limited farmer contacts to that area with few exceptions. The project area size requires coverage of several hundred miles over substandard roads and desert with no acceptable hotels in the area. The Kandahar area has the greatest potential for quick and profitable use of U.S. technicians at little or no additional capital costs. Yet this area

90 miles from Lashkar Gah receives very little benefits from U.S. assistance, although the city of Kandahar has amenities and is central to the agricultural development in Kandahar Province. USAID has short-wave radio and other facilities which could be made available to the team members stationed in Kandahar.

The team should consist of many types of specialists. There is a pressing need for one or more specialists in international market development, agronomists, horticulturists, specialists in agricultural engineering, demonstration extension specialists, farming advisors, irrigation technologists, farm irrigation and drainage engineers, livestock specialists, extension economists, rural sociologists and home demonstration agents. There is also an increasing need for an entomologist and a plant pathologist to impart knowledge of control of plant pests which are of serious concern in HAVR.

Recommendation No. 5

That USAID, in agreement with HAVA, propose:

That an increased AID technical assistance, commodities and training program be continued with emphasis on increasing agricultural productivity despite the problems of an imperfect irrigation system. U.S. agricultural technical assistance where feasible, and part of the engineering services required to increase agricultural productivity under existing circumstances, should be provided through a contract team of specialists.

USAID direct-hire and PASA personnel, as required, should be continued for the purpose of administrative coordination and planning of AID assistance to the project.

PART V

GENERAL COMMENTS

Numerous feasibility studies, surveys and reports on the project have been made by contract and PASA teams. The more significant ones include a comprehensive survey made by the Tudor Engineering Company in 1956, an operational AID review made in 1962, an IGA report issued in December 1970, and the USAID Farm Economic Survey dated December 1971. Other various USAID surveys and reports were made in response to the IGA report of December 1970. There was one previous AID audit made of the project. This audit was No. 71-24, dated December 14, 1970. The thrust of the prior audit was directed toward financial and property control and utilization aspects. The report contained 14 recommendations all of which were either implemented or satisfactorily resolved prior to the commencement of our survey.

3. Helmand Valley Loans as of March 20, 1972:

Loan Description	Loan No.	Million U.S. Dollars Loan Amount	Disbursed	Repaid	Out-Standing
Helmand Valley	470(Ex-Im)	21.00	21.00	11.25	9.75
Helmand Valley	558(Ex-Im)	18.30	18.30	9.46	8.84
Miscellaneous Projects*	003	5.75	5.75	0.33	5.42
Kandahar Diesels	009	0.80	0.66	-	0.66
HACU Equipment	012	4.60	0.12	-	0.12
Kajakai Elec.	013	12.00	0.81	-	0.81
Totals		62.45	46.64	21.04	25.60

* This is a consolidation of several past loans. $1.52 million; $0.50 million; and $0.40 million of the loan was for, respectively, irrigation surveys, land development and electric power in the Valley. Thus less than half of this loan should be assigned to HAVA.

4. Foreign Debt Servicing from the Budget:

	Million Afghanis
1346	-
1347	601
1348	867
1349	1,014
1350	1,140

5. Gross National Product (GNP)

The "Survey of Progress" gives GNP for 1350 as Afs. 62.3 billion.

AUDIT REPORT
COMPREHENSIVE REVIEW OF UNITED STATES ASSISTANCE
IN THE
HELMAND-ARGHANDAB VALLEY REGION (HAVR)
AFGHANISTAN

As of October 31, 1972

SUMMARY ANALYSIS OF RGA FINANCIAL POSITION

1. Government Revenue

	1346	1347	1348	1349	1350**
Domestic	4211	4465	5085	5702	5823
Commodity Assistance *	517	1018	479	627	1047
Total	4728	5483	5564	6329	6870

* Budgetary support from the sale of aid financed (or grant) commodity imports.

** Preliminary actual.

2. Foreign Debt

The Foreign debt as of end of 1350 (March 20, 1972) on direct loans to the RGA and RGA guaranteed loans (payable in foreign currencies) was:

	Million U.S. Dollars		
	Disbursed*	Undisbursed	Total
Total	609	135	744
U.S.S.R.	452	81	533
U.S. **	69	16	85
Other	88	38	126

* Disbursements less repayments of principal -- debt outstanding.

** Includes loans for Ariana's two jets. As of March 20, 1972, loan amount was $7.512 million, all of which was disbursed. $1.672 million had been repaid for debt outstanding of $5.840 million. The Ex-Imp Bank holds $3.380 million of the Ariana loans; Chase Manhattan, $1.272 million; FNCB of New York, $2.260 million; and Boeing, $600,000.

6. Balance of Payments (in million of dollars):

	1346	1347	1348	1349*	1350*
A. Merchandise Trade	61.1	-36.3	-47.3	-30.6	-17.9
1. Exports, f.o.b.	66.4	71.9	82.1	85.7	97.2
2. Imports, c.a.f. **	-126.5	-114.5	-126.0	-112.1	-120.8
Commercial Imports	(-63.5)	(-65.6)	(- 72.5)	(- 75.4)	(- 77.0)
Difference between Customs and Exchange records	-1.0	6.3	-3.4	-4.2	5.7
B. Services, Transfers	51.2	34.7	34.1	18.8	22.1
1. Travel (net)	1.0	1.9	3.4	5.7	6.4
2. Foreign Debt Service	-12.8	-16.1	-22.8	-23.6	-28.1
3. Other	63.0	48.9	53.5	36.7	43.8
C. Errors and Omissions	-1.0	6.0	8.1	7.8	6.9
D. Allocation of SDR's	-	-	4.9	4.0	4.3
E. Surplus or Deficit (-)	10.9	4.4	-0.2	-	15.4

* 1349 and 1350 are preliminary figures.

** Imports financed by loans and grants not shown, but is difference between total imports and commercial imports.

AUDIT REPORT
COMPREHENSIVE REVIEW OF UNITED STATES ASSISTANCE
IN THE
HELMAND-ARGHANDAB VALLEY REGION (HAVR)
AFGHANISTAN

As of October 31, 1972

FACTORS IN ARRIVING AT IRR ON CAPITAL INVESTMENT

In determining an IRR on capital investment, it is necessary to attribute capital structure to the different sectors which received direct or partial benefits from the developments. The agriculture sector received some direct benefits from only about one-half of the total infrastructure created by capital investment. Even this degree of direct benefits was shared by the general economy of the Region and the program to establish the nomadic population by providing work and year around water and grazing for their livestock.

In arriving at a base for use in calculating an IRR it will be necessary to refine the input data to take the foregoing and many other factors into consideration. For irrigated farm land it will be necessary to consider how the capital infrastructure affected different categories of the irrigated land. Fairly reliable statistics reflect that only about 10% of the present irrigated farm land received appreciable benefits from the capital infrastructure, aside from the $20 million spent for the dams and reservoirs. Due to lack of drainage, inadequate control over use of water and other factors, a sizeable percentage of cropland receives diminished benefits from the water supply regulated by the dams.

That portion of the capital investment which relates to present and future electric power, construction of roads, buildings, health and sanitation and other miscellaneous items cannot be charged against irrigated agricultural acreage in determining an IRR for the agriculture sector. Input data must also be corrected because although 363,000

acres of land in the Region are reported as being "under water command", only about 260,000 acres of this land are actually irrigated cropland.

The present status of the irrigation system is reflected in the following categories of land "under water command" in HAVA: (1) receiving full benefits from the capital structure (9,500 acres), (2) under HAVA-constructed lateral partially drained and leveled (25,600 acres, (3) irrigated by old irrigation channels with water from HAVA-constructed canals rather than from old river diversions - some HAVA-built outlet drains (129,000 acres), and (4) irrigated directly from old, privately constructed river diversions (199,000 acres).

A modifying factor in calculating the IRR on the infrastructure is that during the past five years there has been a large increase in agricultural production and income therefrom. Much of the production increase is attributable to USAID technical assistance in introducing improved wheat and corn varieties, mechanized farming, improved farm practices and a trend to horticultural farming. Part of this rapid improvement would have occurred without any governmental capital investment, and an appreciable further increase would have been realized with construction of only the dams.

A negative factor is that the increased availability of water without providing adequate drainage produced undesirable effects in project areas established after 1952, resulting in abandonment or limited use of large acreages in areas affected most by the capital expenditures.

Large areas of these lands are still idle except for sparse grazing and uneconomical tree production. Under good accounting procedure that part of the capital investment relating to the nonproductive land should be written off as a capital loss or charged off to the social venture. It should not be continuously carried as a part of the capital investment relating to irrigated farming.

We gave due consideration to the capacity of the Afghan Government (RGA) and the Afghan economy to support the burden of development in this region; also, capability of HAVA and related entities to assume full responsibility for management of the project and place it on a self-supporting basis.

PART II

BACKGROUND

A. Location and Conditions

To understand the importance of development of the Helmand-Arghandab Valley Region, it is necessary to examine the country situation and needs which gave rise to U.S. AID projects there. Afghanistan, with a population of around 16 million, is an arid, mountainous region and only 12 million of its total land areaof 145 million acres can be cultivated. About 8 million of the arable acres must be irrigated to produce crops. The HAVR presently includes about 260,000 acres of irrigated cropland, with another 250,000 marginally available at great expense for development.

The Valley averages only four to eight inches precipitation each year, usually in few heavy downpours, and melting snows from the high mountain ranges provide the irrigation water which is vital in assuring a steady water supply in the early season and for summer and fall crops. Year around availability of water from new storage reservoirs has made it possible to produce more than one crop each year on the same land, and has in other ways increased productivity.

The Valley Authority covers Helmand and Kandahar provinces with plans for some limited future development in the lower Helmand River area of Chakhansur. Population of the Valley is approximately 1.5 million.

Prior to construction of storage dams and modern irrigation facilities, much of the presently irrigated land in the Valley was irrigated by older methods. For several thousand years the area has been the successive

Project areas created after 1952 were initiated largely for socio-political reasons to provide settlement areas for the nomadic population. Another reason for making the vast capital outlay was to improve the general economy. These factors must also be considered in charging benefits to various segment of the HAVR economy.

AUDIT REPORT
COMPREHENSIVE REVIEW OF UNITED STATES ASSISTANCE
IN THE
HELMAND-ARGHANDAB VALLEY REGION (HAVR)
AFGHANISTAN

As of October 31, 1972

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rise and decline of agriculture as land was first irrigated and then despoiled by water-logging and salts concentration resulting from inadequate drainage, and in some instances, under-application of water. After years of fallow revitalized the soil, the cycle was repeated. Even within the past 20 years some of the modern system constructed with U.S. assistance has repeated this cycle. Further, uncontrolled use of water made available by the storage dams and large canals has accelerated deterioration of the agricultural potential of a considerable acreage of irrigated land not properly drained.

Primitive farming methods, poor seed, inadequate maintenance of soil fertility, prevalence of insect pests and plant diseases, poorly constructed or maintained irrigation facilities and lack of credit for inputs have greatly reduced potential yields on arable land.

B. General Characteristics of the Area

The quality of water from the rivers and other sources is generally good to excellent. Drainage water from all projects is of relatively good quality and suitable for mixing with irrigation water.

Most of the irrigable land areas are overall flat, but individual fields often require considerable leveling and terracing to use irrigation water efficiently. Heavy silt from the river necessitates frequent and costly operation and maintenance of canals and drainage systems.

The Helmand and Arghandab Rivers have frequently changed courses, producing an alluvial soil in the irrigated area. The older river terrace lands are mostly silt or sandy loams underlain with impermeable conglomorate which causes water-logging and resulting salts concentration unless modern drainage is properly constructed and maintained.

Soils are naturally moderate to low in fertility, but annual addition of small quantities of silt restores some phosphate and potassium. The limiting fertilizer factor is nitrogen which needs to be restored by organic, symbiotic or chemical supply.

Legumes are rarely planted. Most of the soils have very poor structure, are cloddy and crust easily, and provide a poor seedbed.

Since funds were depleted before completion of the drainage system, drainage in most areas is only fair to poor. Overuse of irrigation water, combined with poor drainage, has caused the land to become water-logged. This has concentrated salts into surface soil and into the ground water. The water-logging has also caused poor aeration and inability of the soil to fix nitrogen. In many other areas where land would otherwise be suitable for farming, a shortage of water prevents leaching of surface salts.

An estimated 35 to 50 percent of irrigable lands in the project are seriously affected by salinity and alkali conditions which cause direct interference with germination and growth of most crop plants. The native weeds thrive under these conditions. Some of the affected land can be reclaimed at relatively small cost, but reclamation of most of it would be time-consuming and expensive. Reclamation of such lands cannot be accomplished by individuals except through very slow evolutionary processes.

Land throughout the project has been classified based upon agricultural and economic considerations. Basic factors include cost of land development, productive capacity, and cost of production. In the early stages efforts were made to settle farmers on marginally acceptable land but it resulted in failure. The marginal land was then planted in trees or allowed to revert to subsistence pasture for livestock owned by the nomads.

C. History of the Project

The Afghan government first began modern development of the Valley in 1902 with construction of a long canal following the Helmand River above Lashkar Gah. In 1935 an agreement was made with Japan to provide financial and technical assistance. Actual work began in that year with digging of part of the Boghra Canal, but Japanese involvement in World War II ended this assistance after nine miles of the canal were completed.

In 1946 the Afghan government signed an agreement with the Morrison Knudsen/Afghanistan Company (MKA) to continue the project. Work under this contract was financed by the Royal Government of Afghanistan (RGA) from foreign exchange accumulated during

World War II. This source of funding was depleted in 1949, necessitating obtaining loans totaling $39.5 million from the U.S. Export-Import Bank (ExImBk) to continue MKA operations through 1959. Projects have also been financed through RGA funding, U.S. grants, loans and technical assistance, and assistance from the Asian Development Bank and the International Bank for Reconstruction and Development.

In 1952 the Helmand Valley Authority (HVA) was created by Parliament as an autonomous governmental organization to administer the entire project, including functions formerly the responsibilities of various ministries of the National government. This organization was superseded by the Helmand-Arghandab Valley Authority more commonly referred to as (HAVA).

Approximately 500,000 acres of the Valley are suitable for irrigation. It was estimated that development of the Valley potential could increase Afghanistan's total productive lands by more than five percent, but only by large scale government programs with outside financial and technical assistance. No other area of the country offered this potential.

The Arghandab-Tarnak River Basin, Kandahar Province, can be grouped into one general project area, with more than 130,000 acres of irrigated land. This area was fairly well established before 1946, and the irrigated land is largely devoted to growing grapes, tree fruits and other horticultural crops. Food and feed grains are produced in the fringe areas. Project benefits consist of the Arghandab Dam, a diversion dam, the South irrigation canal and limited main drains.

Benefited lands along the Helmand River vary greatly in type and degree of benefit. Capital project investments have been used to construct the Kajakai Dam, the Boghra diversion dam and canal, Shamalan canal, Darweshan canal, and a number of wasteways, main and lateral drains. Depletion of funds halted construction before the drainage system was completed.

Of the approximately 230,000 acres presently irrigated along the Helmand River, about 100,000 acres are not served by project canals or drainage.

The Kajakai Reservoir on the Helmand River has a capacity of nearly 1.5 million acre feet of useable water. By the addition of spillway gates

which were designed into the system, capacity can be increased to 2.4 million acre feet. The average annual runoff of the Helmand River is approximately 5.1 million acre feet at the reservoir, about 60 percent occurring before June. For this reason, the present installation of electric generators at Kajakai is considered feasible.

The capacity of the Arghandab Reservoir on the Arghandab River is about 388,000 acre feet above the outlet valves. The average annual runoff of the Arghandab River is approximately 1.1 million acre feet at the reservoir.

The supply of water from the Tarnak River is unreliable and seasonal. There has been a diversion of water from the Arghandab River to supply part of the Tarnak area.

Considerable acreage in the Valley is irrigated by wells, springs, and karez systems (underground canals). Water from these sources is very limited but is used to the best possible advantage.

D. RGA General Objectives

Stated long range goals of HVA and HAVA were to: (1) eventually bring under cultivation several hundred thousand additional acres of desert land, making it possible to grow much of the food, feed and fiber being imported into Afghanistan at considerable cost in foreign exchange; provide raw materials needed for expansion of industrial projects; (2) introduce machine cultivation as a substitute for existing hand farming and small tool culture farming methods; (3) assure a year around water supply capable of growing more than one crop each year on the same land; (4) introduce new crops and products, including development of a dairy industry; (5) stabilize the nomadic population by eliminating the need for their seasonal movement in search of water and feed for their animals; (6) improve health and educational facilities; and (7) increase the economy of the region and the country as a whole.

AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

OFFICE OF THE AUDITOR GENERAL

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AUDIT REPORT

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AUDIT REPORT
COMPREHENSIVE REVIEW OF UNITED STATES ASSISTANCE
IN THE
HELMAND-ARGHANDAB VALLEY REGION (HAVR)
AFGHANISTAN

As of October 31, 1972

TABLE OF CONTENTS

Page No.

Exhibits